

CHARGE NUMBER: 2306
PROGRAM TITLE: Flavor Component Evaluation
PROJECT LEADER: R. M. Ikeda
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I. Tobacco Flavor¹

U. S. Bright tobacco was sequentially extracted with methylene chloride and then with ethanol. The ethanol extract was injected into 100% RL cigarettes and was found to reduce the burnt woody character and a much smoother smoke. Ethanol was removed and the residue partitioned between water and methylene chloride. Only the methylene chloride phase contained the smoothing components. The methylene chloride fraction was separated by silicic acid column chromatography. Three fractions were eluted with hexane, methylene chloride and methanol. Only the methanol eluted fraction contained the material that improved the flavor of the RL cigarettes. Reverse phase HPLC analysis of this methanol fraction showed the presence of a large number of components.

Fraction 5 isolated from the volatile neutral material from U. S. Bright tobacco was found to improve the smoke flavor of low delivery Bright cigarettes. This fraction was separated by packed column gas chromatography and 14 of the odorous "peaks" were trapped. The trapped materials are being evaluated by members of the Flavor Development Division for their odor intensities and combination that can restore the odor of the original fraction. A 50 m capillary column was installed in the gas chromatograph and a splitter was attached to the end of the column to allow for odor evaluations of the separated components. Initial evaluations were run on fractions separated by column chromatography of the original volatile neutral fraction.

II. Flavors and Casings²

The Carbowax coated fused silica capillary columns deteriorated quite rapidly when used in conjunction with the Purge and Trap device for the analysis of the volatile components of tobacco and filler. Because of this problem, a bonded phase silicone capillary column was installed. One problem with the silicone column was the extinguishing of the flame just after the GC scan was started. The problem appears to be the large amount of water that condenses in the Tenax trap. The tobacco sample was purged for 10 minutes, an empty tube was substituted for the tobacco sample and purged an additional 30 minutes. This additional purge time should remove most of the water condensed in the Tenax trap. The GC analyses by this modified procedure eliminated the flame out problem. The modified procedure also eliminated some variable retention time peaks early in the GC scans.

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III. References

1. Notebook #7574, pp. 61-71
Notebook #7483, pp. 148-162
2. Notebook #7464, pp. 183-200
Notebook #7674, pp. 1-27

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